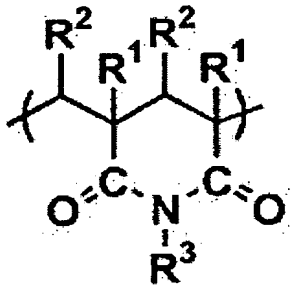
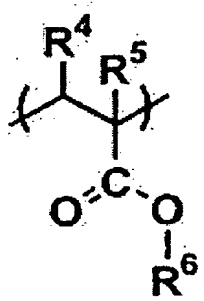
CLAIMS

1. An imide resin, comprising: a repeating unit represented by General Formula (1); a repeating unit represented by General Formula (2); and a repeating unit represented by General Formula (3), wherein an orientation birefringence of the imide resin ranges from -0.1×10^{-3} to 0.1×10^{-3},



... (1)

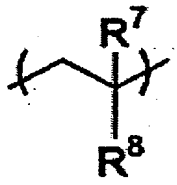
where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon

atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



. . . (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

2. The imide resin as set forth in claim 1, wherein the orientation birefringence ranges from -0.01×10^{-3} to 0.01×10^{-3}.

3. A polarizer-protective film as set forth in claim 1, wherein a molar ratio of the repeating unit represented by General Formula (1) and the repeating unit represented by General Formula (3) ranges from 1.0 : 1.0 to 4.0 : 1.0.

4. The imide resin as set forth in claim 1, wherein a photoelastic coefficient is not more than $10\times10^{-12}m^2/N$.

5. The imide resin as set forth in claim 1, wherein a glass transition temperature is not less than 120°C.

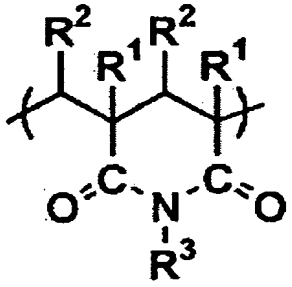
6. The imide resin as set forth in claim 1, being produced on the basis of a method in which a methyl methacrylate-styrene copolymer is treated with an imidization agent in the absence of a solvent.

7. The imide resin as set forth in claim 1, being produced on the basis of a method in which a methyl methacrylate-styrene copolymer is treated with an imidization agent in the presence of a solvent.

8. An optical resin composition, comprising as a main component the imide resin as set forth in any one of claims 1 to 7.

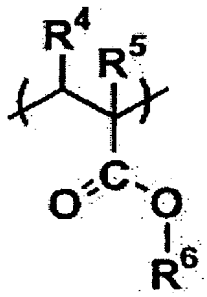
9. A molded product, comprising the optical resin composition as set forth in claim 8.

10. An imide resin, comprising: a repeating unit represented by General Formula (1); a repeating unit represented by General Formula (2); and a repeating unit represented by General Formula (3), wherein the imide resin has a negative orientation birefringence,



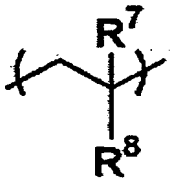
... (1)

where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

11. The imide resin as set forth in claim 10, wherein the orientation birefringence is not more than -0.15×10^{-3}.

12. The imide resin as set forth in claim 10, wherein a photoelastic coefficient is not more than $10\times10^{-12}m^2/N$.

13. The imide resin as set forth in claim 10, wherein a glass transition temperature is not less than 120°C.

14. The imide resin as set forth in claim 10, being produced on the basis of a method in which a methyl methacrylate-styrene copolymer is treated with an imidization agent in the absence of a solvent.

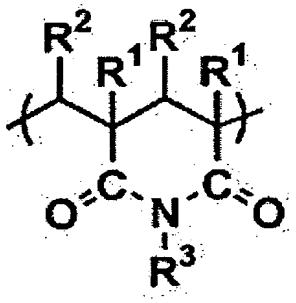
15. The imide resin as set forth in claim 10, being produced on the basis of a method in which a methyl methacrylate-styrene copolymer is treated with an imidization agent in the presence of a solvent.

16. An optical resin composition, comprising as a main component the imide resin as set forth in any one of

claims 10 to 15.

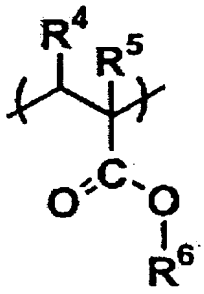
17. A molded product, comprising the optical resin composition as set forth in claim 16.

18. An imide resin, comprising: a repeating unit represented by General Formula (1); a repeating unit represented by General Formula (2); and a repeating unit represented by General Formula (3), wherein a melt viscosity of the imide resin ranges from 1000 to 50000 poise,



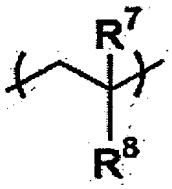
... (1)

where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

19. The imide resin as set forth in claim 18, having positive orientation birefringence.

20. The imide resin as set forth in claim 18, wherein the orientation birefringence is not less than 0.15×10^{-3}.

21. The imide resin as set forth in claim 18, wherein

a photoelastic coefficient is not more than $10\times10^{-12}m^2/N$.

22. The imide resin as set forth in claim 18, wherein a glass transition temperature is not less than 120°C.

23. The imide resin as set forth in claim 18, being produced on the basis of a method in which a methyl methacrylate-styrene copolymer is treated with an imidization agent in the absence of a solvent.

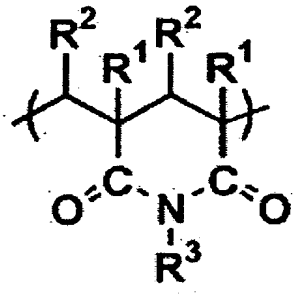
24. The imide resin as set forth in claim 18, being produced on the basis of a method in which a methyl methacrylate-styrene copolymer is treated with an imidization agent in the presence of a solvent.

25. An optical resin composition, comprising as a main component the imide resin as set forth in any one of claims 18 to 24.

26. A molded product, comprising the optical resin composition as set forth in claim 25.

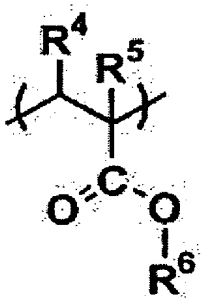
27. A polarizer-protective film, comprising an imide resin which includes: a repeating unit represented by General Formula (1); a repeating unit represented by

General Formula (2); and a repeating unit represented by General Formula (3),



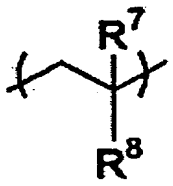
... (1)

where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

28. The polarizer-protective film as set forth in claim 27, wherein an orientation birefringence of the imide resin ranges from -0.1×10^{-3} to 0.1×10^{-3}.

29. The polarizer-protective film as set forth in claim 27, wherein an orientation birefringence of the imide resin ranges from -0.1×10^{-4} to 0.1×10^{-4}.

30. The polarizer-protective film as set forth in claim 27, wherein: in the imide resin, a molar ratio of the repeating unit represented by General Formula (1) and the repeating unit represented by General Formula (3) ranges from 1.0 : 1.0 to 4.0 : 1.0.

31. The polarizer-protective film as set forth in claim 27, wherein a photoelastic coefficient of the imide resin is not more than $10\times10^{-12}m^2/N$.

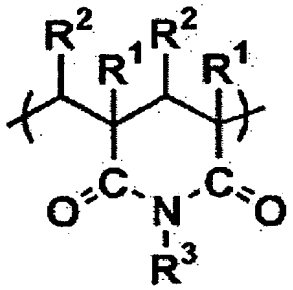
32. The polarizer-protective film as set forth in claim 27, wherein a glass transition temperature of the imide resin is not less than 120°C.

33. A polarization plate, comprising the polarizer-protective film as set forth in any one of claims 27 to 32.

34. A production method of a polarizer-protective film, comprising the steps of:

(i) making, into a film, an imide resin including a repeating unit represented by General Formula (1), a repeating unit represented by General Formula (2), and a repeating unit represented by General Formula (3); and

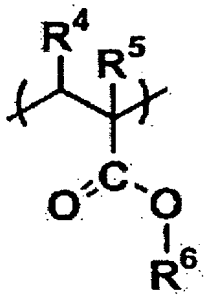
(ii) drawing the imide resin having been made into the film,



... (1)

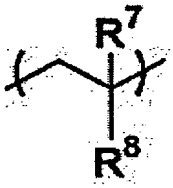
where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group

having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

35. The polarizer-protective film as set forth in claim 34, wherein: in the imide resin, a molar ratio of the repeating unit represented by General Formula (1) and the repeating unit represented by General Formula (3) ranges

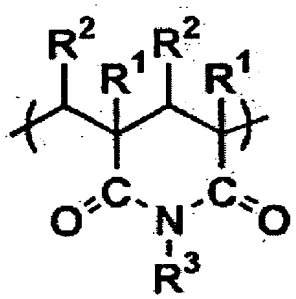
from 1.0 : 1.0 to 4.0 : 1.0.

36. The production method as set forth in claim 34, wherein: in the step (i), the imide resin is made into the film on the basis of a melt extrusion method.

37. The production method as set forth in claim 34, wherein: in the step (i), the imide resin is made into the film on the basis of a solvent casting method.

38. The production method as set forth in claim 34, wherein: in the step (ii), biaxially stretching is carried out.

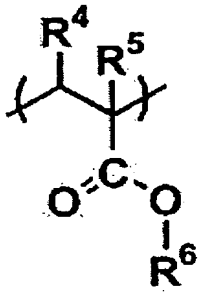
39. A retardation film, comprising an imide resin which includes: a repeating unit represented by General Formula (1); a repeating unit represented by General Formula (2); and a repeating unit represented by General Formula (3),



. . . (1)

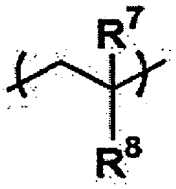
where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon

atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

40. The retardation film as set forth in claim 39, wherein the imide resin has negative orientation birefringence.

41. The retardation film as set forth in claim 39, wherein an orientation birefringence of the imide resin is not more than -2×10^{-3}.

42. The retardation film as set forth in claim 39, wherein the imide resin includes 20 wt% to 50 wt% of the repeating unit represented by General Formula (3).

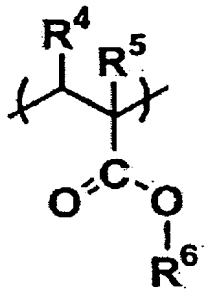
43. The retardation film as set forth in claim 39, wherein a photoelastic coefficient of the imide resin is not more than $10\times10^{-12}m^2/N$.

44. The retardation film as set forth in claim 39, wherein a glass transition temperature of the imide resin is not less than 120°C.

45. A production method of a retardation film, comprising the steps of:

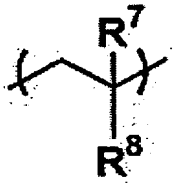
(i) making, into a film, an imide resin including a repeating unit represented by General Formula (1), a repeating unit represented by General Formula (2), and a repeating unit represented by General Formula (3); and

(ii) drawing the imide resin having been made into the film,



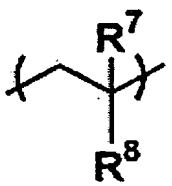
... (2)

where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

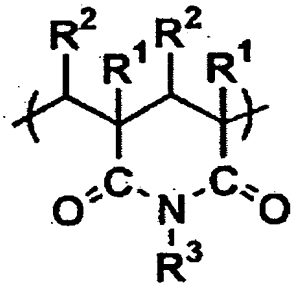
where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

46. The production method as set forth in claim 45, wherein: in the step (i), the imide resin is made into the film on the basis of a melt extrusion method.

47. The production method as set forth in claim 45, wherein: in the step (i), the imide resin is made into the film on the basis of a melt drawing method.

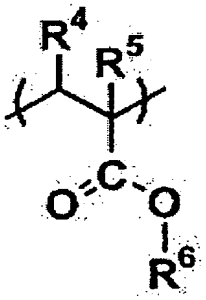
48. A method for producing an imide resin which includes a repeating unit represented by General Formula (1) and has substantially no orientation birefringence, said method comprising the step of:

(a) treating, with an imidization agent, a resin including a repeating unit represented by General Formula (2) and a repeating unit represented by General Formula (3) so that a quantity of the repeating unit represented by General Formula (3) is 15 wt% or more and 40 wt% or less,



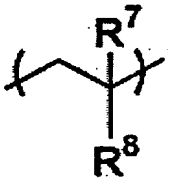
... (1)

where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,

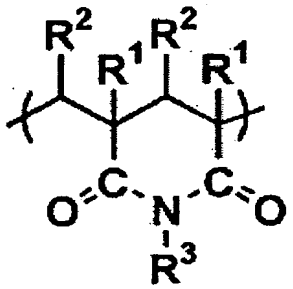


... (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

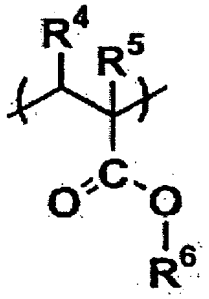
49. The method as set forth in claim 48, wherein: in the step (a), the resin is treated with the imidization agent so that a molar ratio of the repeating unit represented by General Formula (1) and the repeating unit represented by General Formula (3) ranges from 1.0 : 1.0 to 4.0 : 1.0.

50. A method for producing an imide resin, which includes a repeating unit represented by General Formula (1) and has a negative orientation birefringence, said method comprising the step of: (I) treating, with an imidization agent, a resin including a repeating unit represented by General Formula (2) and a repeating unit represented by General Formula (3) so that a quantity of the repeating unit represented by General Formula (3) is 20 wt% or more and 50 wt% or less,



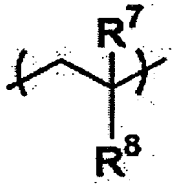
. . . (1)

where each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (2)

where each of R^4 and R^5 independently represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^6 represents an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 3 to 12 carbon atoms, or an aryl group having 6 to 10 carbon atoms,



... (3)

where R^7 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R^8 represents an aryl group having 6 to 10 carbon atoms.

51. An imidized methacrylic resin composition, being

transformed by treating, with an imidization agent, a methacrylic resin composition (C) obtained by copolymerizing a methacrylic ester polymer (A) in the presence of acrylic ester cross-linking elastic particles (B), wherein:

the methacrylic ester polymer (A) is a polymer obtained by polymerizing a monomer mixture including 50 to 99 wt% of methacrylic alkyl ester, 0 to 49 wt% of acrylic alkyl ester, and 1 to 50 wt% of an aromatic vinyl monomer, and

the acrylic ester cross-linking elastic particles (B) are a copolymer obtained by polymerizing a monomer mixture (b) including 50 to 100 wt% of acrylic alkyl ester and 50 to 0 wt% of methacrylic alkyl ester with a multifunctional monomer having two or more unconjugated double bonds.

52. The imidized methacrylic resin composition as set forth in claim 51, wherein an orientation birefringence of the imide resin ranges from -0.1×10^{-3} to 0.1×10^{-3}.

53. The imidized methacrylic resin composition as set forth in claim 51, wherein a glass transition temperature of the imide resin is not less than 120°C.

54. A molded product, comprising the imidized methacrylic resin composition as set forth in any one of claims 51 to 53.

55. A film, being obtained by molding the imidized methacrylic resin composition as set forth in any one of claims 51 to 53.

56. A laminate, being obtained by laminating the film as set forth in claim 55 on metal or plastic.